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**AUSTRALIA**  
*Patents Act 1990*

**PROVISIONAL SPECIFICATION**

**FOR THE INVENTION ENTITLED:**

**"Multi-Purpose Structural Component"**

**Applicant:**

**John Clement Preston**

The invention is described in the following statement:

## MULTI-PURPOSE STRUCTURAL COMPONENT

### Technical Field

- 5           This invention relates to prefabricated structural components adapted to be assembled to form various demountable building and other structures.

### Background Art

- 10           Toy construction kits are known wherein a plurality of identical components are provided adapted to be assembled together in a variety of ways to form models of a great variety of different articles and structures. Usually the individual components are adapted to be held together by inter-engaging formations providing some frictional restraint on disengagement. Alternatively specific coupling pieces  
15 adapted to be similarly engaged with two or more basic components may be provided. In some instances the structural integrity of the finished model depends upon the simultaneous inter-engagement of more than two components.

- The present invention is not concerned with the assembly of model structures  
20 but rather with the assembly of full scale, load bearing, skeletal frameworks of buildings and engineering structures generally.

- Therefore, possibly more relevant prior art is the well known demountable scaffolding used for temporary ancillary structures at building construction sites.  
25 Such scaffolding comprises a multiplicity of basic tubular members and many and varied coupling elements for fastening the basic members together. Typically the coupling elements comprise clamps, pins extending through clearance holes in the members and temporarily held in place by cross-cotter pins, U-shaped straps on the members adapted to be aligned to receive wedges and other quick release, fastening  
30 devices. The coupling elements and the adaptations of the basic members of such scaffolding to their associated coupling elements frequently displays considerable

ingenuity providing for the rapid assembly and disassembly of the scaffolding without the need for tools or anything but the most basic of tools, such as a hammer.

### Summary of Invention

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The emphasis in prior known scaffolding is on the quick assembly and disassembly of individually lightweight members able to be manhandled into position. Thus, strength in the finished scaffolding is ensured by using a considerable number of closely spaced members. This renders conventional scaffolding components unsuitable for use in demountable structures that substantially replicate the load bearing, skeletal structures of finished buildings and the like.

15 An object of the present invention is to provide standardised structural components that may be used in the construction of temporary buildings or other structures at construction sites adapted for habitation or normal use by building workers and others during the construction of permanent structures at the site in question.

20 Typically the components of the invention may be used as columns and/or beams in demountable structures such as: protective pedestrian walkways adjacent to construction sites; site offices, possibly integrated with such walkways; multi-storey towers providing access and service facilities to the various floors of a multi-storey building under construction; garages; storage sheds; barracks; and like temporary building ancillaries required at civil engineering construction sites.

The invention consists in a rectangular prismatic structural component presenting at least one longitudinally extending side face, two longitudinally extending edge faces and two end faces;

30 wherein said side face is pierced by a plurality of holes arranged in two rows extending longitudinally of said side face, wherein the holes in each row in said side

face have a constant centre to centre pitch distance, wherein the distance from the centre of each end hole in each row in said side face to an adjacent end edge of the side face is substantially one half of said pitch distance, and wherein the distance between the centre of each hole in said side face to an adjacent side edge of said side face is substantially one half of said pitch distance;

wherein each edge face is pierced by a plurality of holes in a row extending longitudinally of said each edge face, wherein the holes in the row in said each edge face have the same centre to centre pitch distance as that of the holes in each row in the side face, wherein the distance from the centre of each end hole in the row in said each edge face to an adjacent end of said edge face is substantially one half of said pitch distance; and wherein the distance between the centre of each hole in said each edge face and an adjacent side edge of said side face is substantially one half of said pitch distance; and

wherein each end face is pierced by a plurality of holes in a row extending longitudinally of said each end face, wherein the holes in the row of said each end face have the same centre to centre pitch distance as that of the holes in each row in the side face, wherein the distance from the centre of each end hole in the row in said each end face to an adjacent end of said each end face is substantially one half of said pitch distance, wherein the distance between the centre of each hole in said each end face and an adjacent end edge of said side face is substantially one half of said pitch distance.

In so far as the term "row of holes" is used herein with reference to the holes in an end face it is intended to include a row that is only two holes long, each of which is then an end hole of the row.

In preferred embodiments structural components according to the invention may comprise two parallel, rolled steel angles, a plurality of spacer plates welded to the angles to space them apart and unite them so that each has one flange lying in the plane of the side face of the component and another flange lying in the plane of



a respective edge face of the component, and two end plates welded to the angles and lying in the respective planes of the end faces of the component.

By way of example three embodiments of the above described invention are described in more detail hereinafter with reference to the accompanying drawings.

#### Brief description of the Drawings

Figure 1 is a perspective view of an end portion of a structural component according to the invention.

Figure 2 is a cross-sectional elevation of the component of figure 1.

Figure 3 is a view similar to figure 1 of a second embodiment of the invention.

Figure 4 is a cross-sectional elevation of the component of figure 3.

Figure 5 is a view similar to figure 1 of a third embodiment of the invention..

Figure 6 is an end elevation of the component of figure 5..

#### Best Mode of putting the invention into effect.

The several embodiments illustrated by the drawings have much in common. Therefore, in the interest of brevity, identical components and features bear the same reference numbers and are not further described in later described embodiments following an initial description in an earlier described embodiment.

Figures 1 and 2 illustrate a structural component of indefinite length in the form of a rectangular prism presenting a longitudinally extending side face 10, two

longitudinally extending edge faces 11 and two end faces 12 (of which only one appears in the figures).

5 The component of figure 1 and 2 comprises two parallel, rolled steel angles 13, a plurality of spacer plates 14 and 15 welded to the angles 13 to space them apart and unite them so that each has one flange with a surface in the plane of the side face 10 and another flange with a surface in the plane of a respective edge face 11, and two end plates 16 welded to the angles 13 with a surface in the plane of a respective end face 12.

10

Each flange of each angle 13 is pierced by a plurality of fastener clearance holes 17 arranged in a row extending longitudinally of the component. The holes 17 are all spaced apart equally, in that the centre to centre pitch distance "p" between each pair of neighbouring holes 17 is of constant length, as indicated by  
15 dimension lines in figure 1. In accordance with the invention the centre line of each row of holes is spaced from an adjacent side edge of the side face 10 by a distance "p/2" as indicated by dimension lines in the figure 2. Also the centre of each end hole in each row is spaced from an adjacent edge of the end face 12 by "p/2", as indicated by dimension lines in figure 1.

20

Each end plate 16 is also pierced by two holes 17 to constitute a row of holes, as that term embraces herein. In this instance the two holes are at a centre to centre distance of "p" and each hole is spaced from the side face 10 and its adjacent end face 11 by "p/2". In other embodiments the spacer plates 14 may be pierced by  
25 further holes 17 positioned relative to the spacer plate in the same way as the holes 17 in the end plate 16.

The component illustrated by figures 3 and 4 is the same as that of figures 1 and 2 except that the spacer plates 34, 35 and the end plate 36 are longer than their  
30 counterparts 14, 15 and 16 in figure 1 by an amount of "p" and in that a third hole 17 is provided in the row of holes 17 in the end plate 36.

In another embodiment similar to that of figure 3 the spacer plates 34 may be pierced by holes 17 corresponding to those in the end plate 36 and the spacer plates 35 may be pierced by a centrally placed hole 17.

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The embodiment illustrated by figures 5 and 6 may be identical to that of figures 3 and 4 except in that there is no counterpart to the spacer plates 35 and in that the spacer plates 34 are replaced by more closely spaced inclined plates 54.

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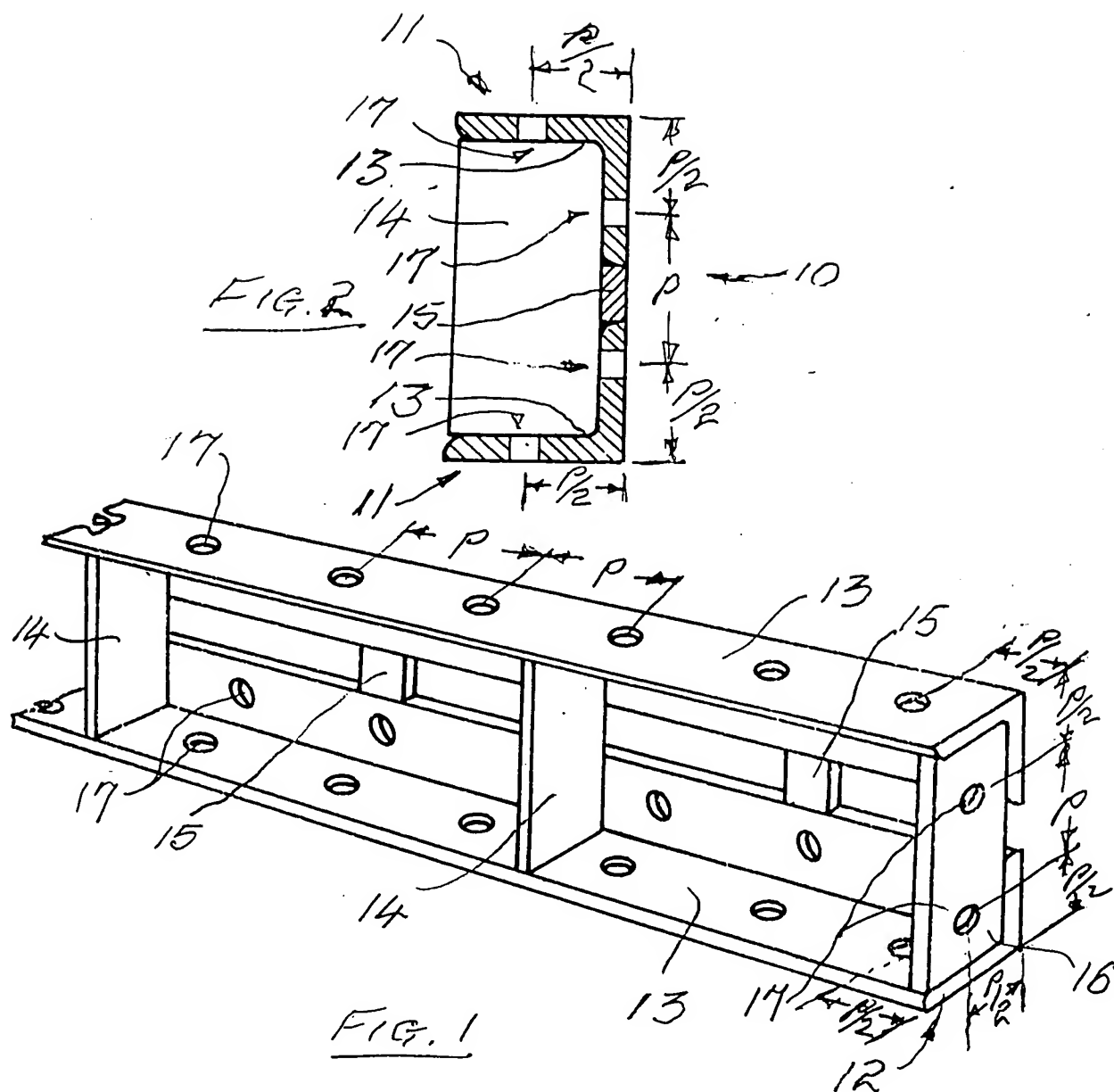
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By his Attorneys

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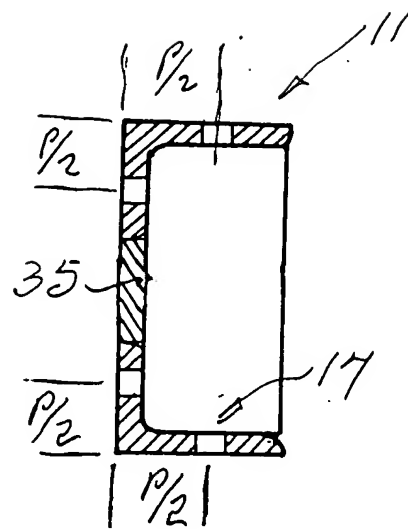


FIG. 4.

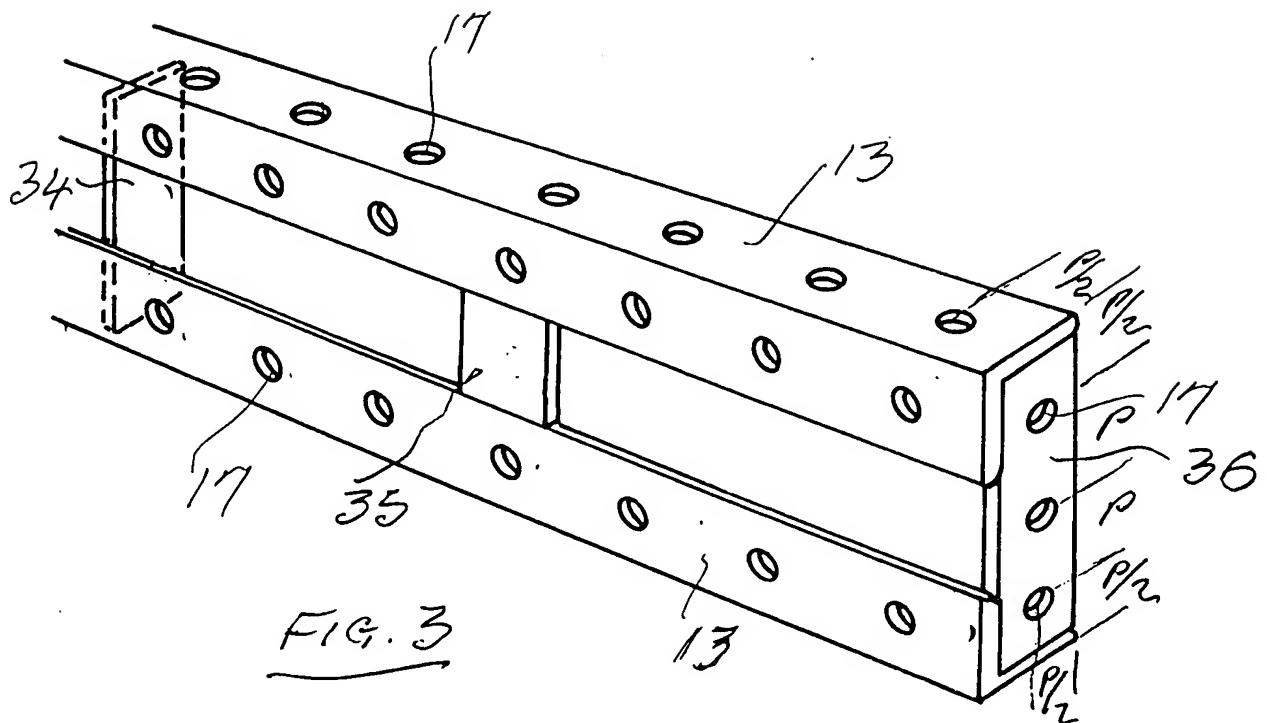


FIG. 3

FIG. 6.

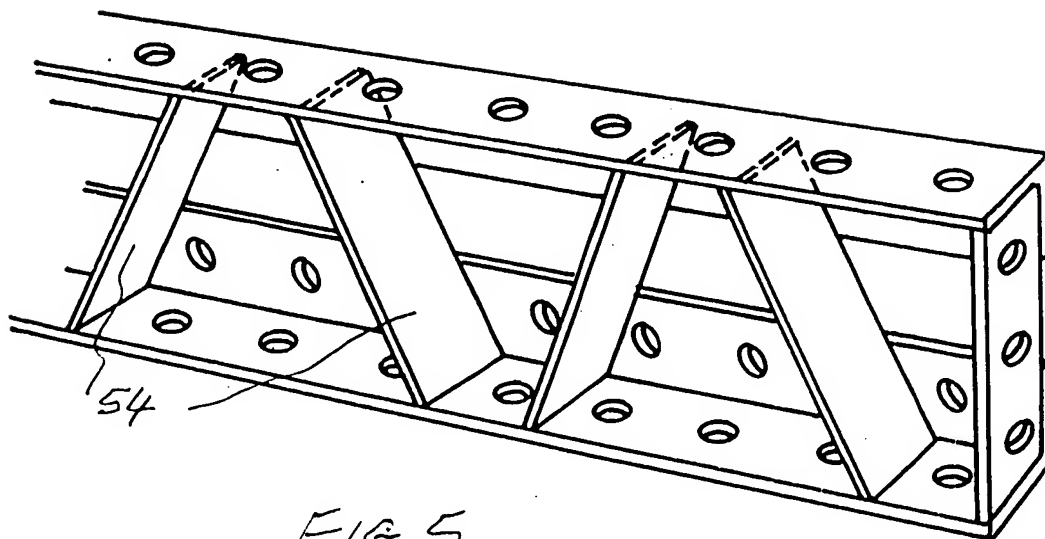
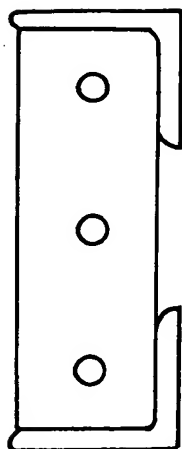


FIG 5